## Warnings and cautions

- Operate the pump in the rated pressure range of 15,000 psi (1,000 bar) and do not exceed the safety pressure of 18,000 psi (1,200 bar).
- When the system pressure is greater than 10,000 psi, you must close the pre-pressurization shut off valve（#7）and then pressurize the system with the high pressure handle.
- Close all valves and handles and tighten the ports when transporting the pump.
- Always keep the reservoir cover vent valve（#4）open during operation.
- Do not over tighten the valves, connectors and handles to avoid damage.
- Change media immediately if it is contaminated.
- Keep media level between 1/4 and 3/4 of the liquid reservoir filled.
- Keep the threads clean and lubricious, and remove any dirt on threads.
- Used by trained personnel only.
- Additel is not liable for any safety problems or damages caused by misuse or incorrect operation.
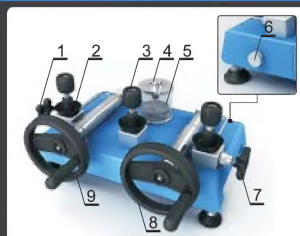
## Additel 936/937/938

### Hydraulic High Pressure Test Pump User's Manual

[Version number:1505V04]
Please download the latest version from www.additel.com

## Specification

- **Pressure range:** 12.5 psi（0.85 bar）vacuum to 15,000 psi（1000 bar）positive pressure

  *Remark：If local atmosphere pressure is 1 bar, the vacuum can reach to 0.85 bar; If local atmosphere pressure is P, the vacuum can reach to（P × 85%）bar.*

- **Temperature:** （5 ~ 50）℃
- **Adjustment resolution:** 0.015 psi（1 mbar）
- **Safety pressure:** <18,000 psi (1,200 bar)
- **Pressure media:**
  - ADT936: Mineral oil SO-VG22 or compatible oil.
  - ADT937: Oil,compatible to phosphoric acid ester fluid and Skydrol oil.
  - ADT938: Deionized water.
- **Size:** Height: 10.43" （265 mm）
  Base: 20.71" （526 mm）x 9.65" （245 mm）
- **Weight:** 35.5 lb（16 kg）

## Views and Hydraulic Schematic



1- Vent valve
2- Over-flow reservoir
3- Quick connector
4- Reservoir cover vent valve
5- Reservoir
6- Liquid drain valve
7- Pre-pressure shut off valve
   (Isolates the calibration volume from the pre-pressure side of the pump)
8- High-pressure and fine pressure adjustment handle
9- Pre-pressure handle

### Hydraulic Schematic



## Troubleshooting

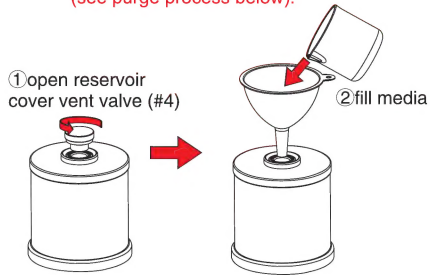| Problem | Cause | Solution |
|---|---|---|
| It is difficult to generate pressure with the pre-pressure handle (#9) | Vent (#1) is not closed | Close vent valve (#1) |
| | The O-ring in quick connector is missing, misplaced, or broken | Replace with a new O-ring |
| | Pre-pressure shut off valve (#7) is closed | Open pre-pressure shut off valve (#7). Caution: the pre-pressure side of the pump should not be exposed to more than 10,000 psi (700 bar). |
| | Not enough media is in the reservoir. | Fill more media, and keep media level between 1/4 and 3/4 of the liquid reservoir filled |
| | Too much air is in the pump (see purge section of the manual) | Purge the air from the system (see purge section of the manual) |
| | Max pressure generation (could be as low as 5,000 psi, 350 bar) is achieved with the pre-pressure handle (#9) | Close pre-pressure shut off valve and use high-pressure and handle (#8). |
| It is difficult to pressurize by turning the high-pressure handle (#8) | The pre-pressure shut off valve (#7) is not closed completely | Close pre-pressurization shut off valve (#7) |
| | Reference gauge or devices under test (DUTs) are not connected tightly | Check finger-tight connectors, re-tight if necessary |
| | The O-ring in quick connector is missing, misplaced, or broken | Replace with a new O-ring |
| | The end surface of the DUT connection thread is not smooth | Use a PTFE washer in finger-tight connector |
| | The connector of the DUT is not matched to quick connector | Use proper adapter |
| It is difficult to generate high vacuum | Purge the air from the system (see purge section of the manual) | Purge the air from the system (see purge section of the manual) |
| | #4 valve is not open | Open the #4 valve |
| Hard to pressurize large-volume DUT | Because of the large volume of the DUT, it will take additional steps to fill the volume to pressurize the DUT | Step 1: Turn pre-pressure handle (#9) all the way in clockwise, close pre-pressure shut off valve (#7), open vent valve (#1). Step 2: Turn pre-pressure handle (#9) all the way counterclockwise, close vent valve (#1). Step 3: Open pre-pressure shut off valve (#7), pressurize the system. Step 4: Repeat step 1 to 3. |
| Pressure gauges do not reach to zero | #4 valve is not open | Open the #4 valve |
| Hard to turn the valves or handles | Too much force was previously applied | Do not over tighten |
| | Hard to turn pre-pressure handle (#9) at high pressure | This is normal. Close the pre-pressure shut off valve (#7) and use the high-pressure handle to adjust the pressure. |
| | Lack of lubrication on threads | Lubricate the threads |

### O-Rings for pressure connector

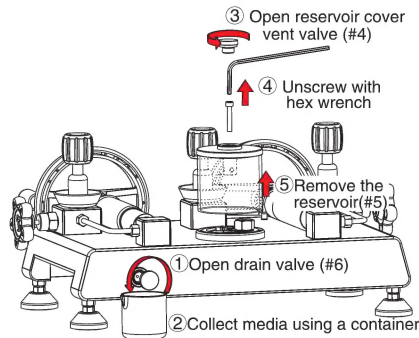| P/N | Size | Connector |
|---|---|---|
| 1611300004 | 4X1.5 | M10X1, 1/8BSP, 1/8NPT |
| 1611300220 | 6.5X3 | M20X1.5, 1/2BSP, 1/2NPT |
| 1611300024 | 6X2 | M14X1.5, 1/4BSP, 1/4NPT, 3/8BSP |
| 1611300221 (only for ADT937) | 6.5X3-EPDM70 | M20X1.5, 1/2BSP, 1/2NPT |
| 1611300222 (only for ADT937) | 6X2-EPDM70 | 1/4BSP, 1/4NPT |

## Maintenance

### Fill media — A

Note: In order to properly generate pressure, the gas must be purged from the pump (see purge process below).
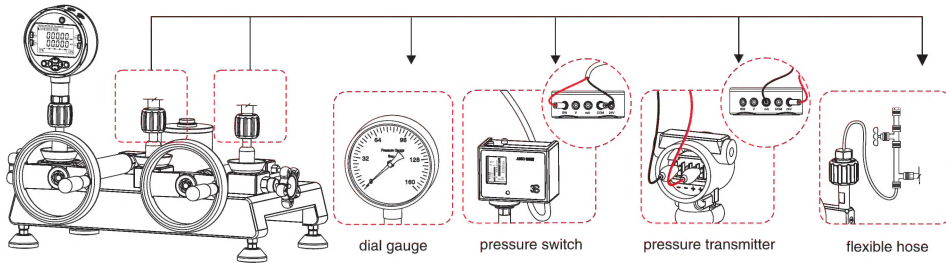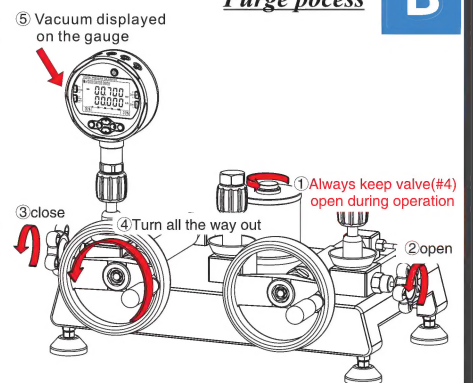
① open reservoir cover vent valve (#4)
② fill media

### Drain and Clean — B

③ Open reservoir cover vent valve (#4)
④ Unscrew with hex wrench
⑤ Remove the reservoir (#5)
① Open drain valve (#6)
② Collect media using a container

## Basic Operation

### Connection — A

Note: Gauge positions are interchangeable. Any open ports should be plugged prior to operation.

dial gauge    pressure switch    pressure transmitter    flexible hose

### Purge pocess — B

⑤ Vacuum displayed on the gauge
① Always keep valve(#4) open during operation
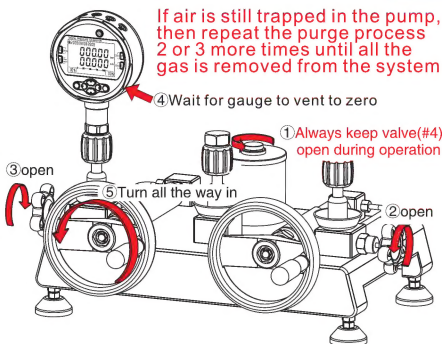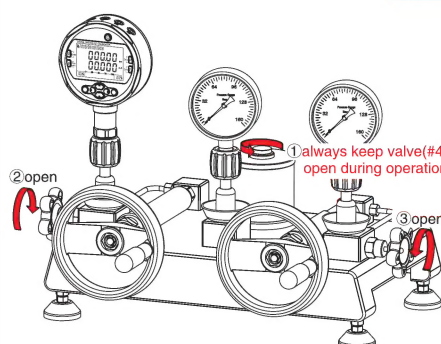② open
③ close
④ Turn all the way out

### Purge process (cont.) — C

If air is still trapped in the pump, then repeat the purge process 2 or 3 more times until all the gas is removed from the system

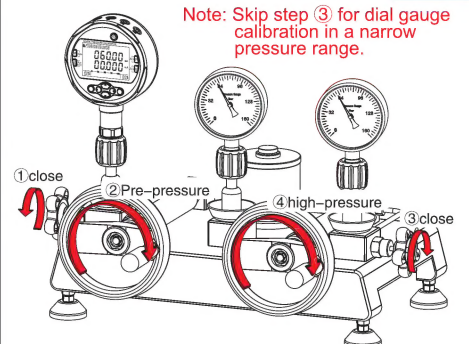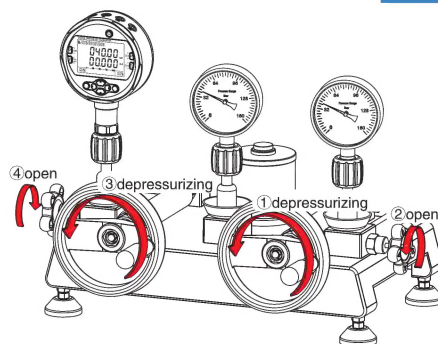④ Wait for gauge to vent to zero
① Always keep valve(#4) open during operation
③ open
⑤ Turn all the way in
② open

### Zeroing — D

② open
① always keep valve(#4) open during operation
③ open

### Pressurizing process — E

Note: Skip step ③ for dial gauge calibration in a narrow pressure range.

① close
② Pre-pressure
④ high-pressure
③ close

### Depressurizing process — F

④ open
③ depressurizing
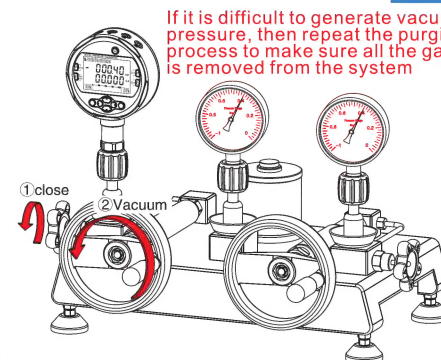① depressurizing
② open

### Vacuum process — G
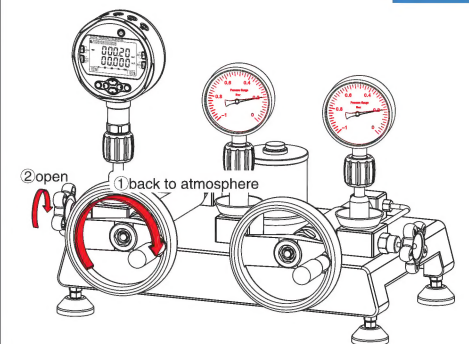
If it is difficult to generate vacuum pressure, then repeat the purging process to make sure all the gas is removed from the system

① close
② Vacuum

### Vent — H

② open
① back to atmosphere

### Remark:

A: Additel has made a concerted effort to provide complete and current information for the proper use of the equipment. The product specifications and other information contained this manual are subject to change without notice.

B: Above pictures are just for reference.